Creator of the world's first radio and radio transmitter

ALEXANDER STEPANOVICH POPOV

THE FIRST STEPS TO THE RADIO

When in 1887 the German physicist G.R. Hertz (1857 - 1894) proved the hypothesis of J.K. Maxwell (1831 - 1879) on the existence of electromagnetic waves propagating at the speed of light (now called radio waves), many inventors in different countries have addressed the issue of using these waves for wireless signal transmission. A considerable contribution was made to this by the French physicist E. Branly (1844 - 1940), as well as the English scientist O. J. Lodge (1851 - 1940).

The first radio broadcast in the world was carried out in Russia by the famous inventor and scientist A.S. Popov (1859 -1906). In 1888, the scientist learned about the discoveries of Hertz and immediately began to reproduce them. In 1889, in one of his lectures, Popov first pointed out the possibility of using electromagnetic waves to transmit signals to a distance without wires. After reviewing the work of Branly and Lodge, Popov continued to improve the details of the transmitter and receiver by introducing such important new elements as a wire connected to the circuit, i.e. prototype of the receiving antenna (1894). At this time with A.S. Popov began to work his friend and assistant P.N. Rybkin (1864-1948). April 23 (May 7 according to the new style) 1895 at a meeting of the Russian Physical-Chemical Society A.S. Popov showed off his apparatus, " He was the founder of all the receiving devices of the spark "wireless telegraphy." Having discovered that the device responds to lightning discharges, Popov created his own "light detector", which was practically used to receive signals about the approach of thunderstorms at the Meteorological Observatory of the Metropolitan Forest Institute, at the Nizhny Novgorod Fair and other cases. In 1895 - 1896 the scientist improved his transmitting device. On March 12 (24), 1896, the reception of the world's first radiogram was organized at the Physics Office of St. Petersburg University on Vasilyevsky Island. The departure station was 250 meters away at the Chemical Institute. A telegraph apparatus was attached to the receiver, transmitting one letter after another in the Morse alphabet. The text of this dispatch read: "Heinrich Hertz." wireless telegraphy. "Having discovered that the device responds to lightning discharges, Popov created his own" light detector ", which was practically used to receive signals about the approach of thunderstorms at the Meteorological Observatory of the Moscow Forest Institute, at the Nizhny Novgorod Fair and other cases. In 1895 - 1896, the scientist improved On March 12 (24), 1896, the first radiogram in the world was organized at the Physics Office of St. Petersburg University on Vasilyevsky Island, and the departure station was 250 m away meters, at the Institute of Chemistry. A telegraph machine was attached to the receiver, transmitting one letter after another in the Morse alphabet. The text of this dispatch read: "Henry Hertz." wireless telegraphy. "Having discovered that the device responds to lightning discharges, Popov created his own" light detector ", which was practically used to receive signals about the approach of thunderstorms at the Meteorological Observatory of the Moscow Forest Institute, at the Nizhny Novgorod Fair and other cases. In 1895 - 1896, the scientist improved On March 12 (24), 1896, the first radiogram in the world was organized at the Physics Office of St. Petersburg University on Vasilyevsky Island, and the departure station was 250 m away meters, at the Institute of Chemistry. A telegraph machine was attached to the receiver, transmitting one letter after another in the Morse alphabet. The text of this dispatch read: "Henry Hertz." "lightning detector", which was practically used to receive signals about the approach of thunderstorms at the Meteorological Observatory of the Metropolitan Forest Institute, at the Nizhny Novgorod Fair and other cases. In 1895 - 1896, the scientist improved his transmitting device. On March 12 (24), 1896, the first radiograms in the Physics office of St. Petersburg University on Vasilievsky Island.The departure station was 250 meters away at the Chemical Institute. A telegraph device was connected to the receiving device, transmitting . Passes the obligation alphabetically Morse one letter after the other text of the dispatch read: "Heinrich Hertz". "lightning detector", which was practically used to receive signals about the approach of thunderstorms at the Meteorological Observatory of the Metropolitan Forest Institute, at

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Meanwhile, in the summer of 1896. information appeared in the press (without communicating any technical details) that the Italian Marconi had discovered the method of "wireless telegraphy." G. Marconi (1874-1937) did not have a special education, but possessed an energetic commercial and technical enterprise. Having carefully studied everything that was published on the issue of the transfer of radiation without wires, he himself designed the corresponding devices and went to England. In England, with the support of the postal service, Marconi set up a private company, Wireless Telegraph and Signal (Wireless Telegraph and Signal Company). The first radiogram was transmitted in June 1898. In 1899, Marconi transmitted through the English Channel, and in 1901 through the Atlantic.

The problem of wireless signal transmission was much dealt with by an American scientist of Yugoslav origin N. Tesla (1856 - 1943). In 1890 - 1891 He created a special high-voltage high-frequency resonant transformer, which played an exceptional role in the further development of radio engineering. In 1896, Tesla transmitted radio signals at a distance of 32 km. on ships moving along the Hudson. Since 1901, ships began to be equipped with radio transmitters. In 1905, the American Forest established radio communication between the train on the way with stations at a distance of 50 km. In 1907, a reliable radio communication was established between Europe and America. In 1910, the Tennessee steamer received a weather forecast message from California at a distance of 7.5 thousand km, and in 1911 radio communication reached 10 thousand km.

Of great importance for the further development of telecommunications was the appearance at the turn of the 19th and 20th centuries. electronic lamps. In 1883, Edison discovered that the glass bulb of a vacuum incandescent bulb darkens due to atomization of the filament material. It was subsequently established that the cause of this "Edison effect" is the emission of electrons by a red-hot filament of a light bulb (the phenomenon of thermionic emission). In 1904, the English scientist J.E. Fleming (1849-1945) invented a vacuum diode (two electrode lamp) and used it as a detector (frequency converter of electromagnetic waves) in wireless telegraph receivers. In 1906, the American designer Lee de Forest (1873 - 1961) created a three-electrode vacuum lamp - a triode (Forest audio), which could be used not only as a detector, but also an amplifier of weak electrical vibrations. After 4 years, the engineers of Lieben, Reiks and Strauss in Germany constructed a triode with a grid in the form of a perforated aluminum sheet placed in the center of the cylinder. However, the first devices had a weak gain. Additional research was needed to turn the triode into a real amplifier. This new device was the regenerative circuit (1912) of the American radio engineer E.Kh. Armstrong (1890-1954). It was a sensitive receiver and the first non-mechanical generator of pure continuous sinusoidal signals. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco. Reiks and Strauss in Germany constructed a triode with a grid in the form of a perforated aluminum sheet placed in the center of the container. However, the first devices had a weak gain. Additional research was needed to turn the triode into a real amplifier. This new device was the regenerative circuit (1912) of the American radio engineer E.Kh. Armstrong (1890-1954). It was a sensitive receiver and the first non-mechanical generator of pure continuous sinusoidal signals. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco. Reiks and Strauss in Germany constructed a triode with a grid in the form of a perforated aluminum sheet placed in the center of the container. However, the first devices had a weak gain. Additional research was needed to turn the triode into a real amplifier. This new device was the regenerative circuit (1912) of the American radio engineer E.Kh. Armstrong (1890-1954). It was a sensitive receiver and the first non-mechanical generator of pure continuous sinusoidal signals. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco. Additional research was needed to turn the triode into a real amplifier. This new device was the regenerative circuit (1912) of the American radio engineer E.Kh. Armstrong (1890-1954). It was a sensitive receiver and the first non-mechanical generator of pure continuous sinusoidal signals. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco. Additional research was needed to turn the triode into a real amplifier. This new device was the regenerative circuit (1912) of the American radio engineer E.Kh. Armstrong (1890-1954). It was a sensitive receiver and the first non-mechanical generator of pure continuous sinusoidal signals. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco. Armstrong's regenerative scheme was quickly adopted by industry. In 1915, transcontinental telephone communication using regenerative repeaters was established between New York and San Francisco.

In 1913, the German A. Meissner (1883 - 1958) discovered the ability of a triode to amplify and generate electromagnetic waves. Thanks to this, the first tube radio transmitter was built. Meisner's transmitter transmitted both telephone and telegraph signals. In the development of receiving-amplifying and generator lamps, a significant role belongs to the Russian physicist N.D. Papaleksi (1880 - 1947). In 1911, he laid the foundations of the theory of converter circuits in electronics. In the years 1914-1916. Papaleksi led the development of the first samples of domestic radio tubes. In 1916, with the active participation of the radio scientist M.A. Bonch-Bruevich (1888 -1940) in Russia was established its own production of electronic lamps.

Literary sources:

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